

H
Newburyport Dec 5. '92

Mr Geo E. Davenport
Dear Sir

I wrote Professor Eaton
a while ago that I had a plant
of a hybrid fern (I claim it to be
a hybrid between *A. marginal* and
A. cristatum) in my garden of
which I had previously sent him
specimen fronds and that he
could have it to examine if
he wished. He informs me that
he has sent the specimens to you
for examination and gave me
your address. I make the same
offer to you if you would like
it and I can manage to
lift it as it is probably frozen

in. I have found this fern in
several places

I would like also to know if
he included in the friends sent
an odd form of *A. Thelypteris*
[*A. novaboracense*?]

Yours truly

Raynal Dodge

Newburyport

Mass

Newburyport 8-7. '93

Mr Davenport.

Dear Sir;

Replying to yours of today
I would state that Saturday
the 12th would be entirely agree-
able to me as a day to make an
excursion in quest of my hybrid
It will be necessary however
to make a little change in
your programme.

I have never found but five
plants outside of Boxford

and those I have taken up
I have found in Boxford
some fifteen or twenty of
them in fact I found nine
at Crooked Pond last
week taking five and leav-
ing four and I think If
I should go there for that
express purpose that I could
find quite a number

So then if you take the 12.15
train on the western division
for Topsfield. I will take the
11 from Newburyport for
the same place and await
your coming at Topsfield
depot

It will then be necessary
to hire a team or a team
and a driver at Topsfield
and drive to Crooked Pond
three miles.

Returning a train runs
through Topsfield for
Boston about 6.15

Yours truly

Raynal Dodge

4 1
Newburyport 9/17 '93

Friend Davenport.

I have been over into Seabrook woods to day. I spent from 8 this morning until dark looking up the odd form of *Nox-Thelypteris*? And by the way. I answered one of your questions wrongly last Sunday when you asked me where I first noticed this fern about 12 years ago. I should have said in Seabrook Woods instead of Salisbury. I have a frond yet which I collected at that time.

I went over with the determination to collect all the intermediate

forms I could find but curiously enough I failed to find any. Seabrook woods is a fine locality for this fern and perhaps we would have been justified in trying to get there last Sunday and I should have attempted it if Dr Noyes had not been anxious that we should visit his locality. I went first to the locality where I first noticed it but the woods have been cut off in that particular place within a few years leaving the fern still growing there in a wet sunny place. Now you are well aware that the natural conditions of this fern are wet and shade I consequently found that it put on here a quite different appearance.

In fact at first sight the fertile fronds reminded me quite strongly of those of *Thelypteris* but on further investigation I found them to be very different from the *Thelypteris* which was growing amongst it.

1st Because although the margins of the pinnae were somewhat reflexed in some cases considerably so yet the main difference was that all the pinnae were unduplicate both in the sterile and fertile fronds giving the sterile fronds much the appearance of *Asplenium Filix foemina* when growing in the sun. Now the pinnae of *Thelypteris* were perfectly flat in both sterile and fertile

fronds the fertile fronds merely having the edges of the pinnules turned over in these pinnae which were fruitful.

2 The lowest one or two pair on both fronds were reflexed, elliptic lanceolate and much shorter than the others. whilst in *Thelypteris* they were all in the same plane lanceolate and about the same length as the others

3^d There was a great difference in color. The fronds of this fern are dark green, those of *Thelypteris* are light bluish green. Color not reliable
9.8.03

4th In larger size of the indusia which were however not quite as large as when the fern grows under natural conditions.

I think too that the new fern has more sori but I have

not yet counted them under the lens.

5. In the greater number of fertile fronds. Whilst there are about as many fertile as sterile fronds in the new fern in

Thelypteris there are many more sterile than fertile ones

6. I did not find a single case in the *Thelypteris* of a sterile frond being partly fertile whilst in the case of the new fern there were fronds with a few fruit dots on very many of the plants. The sterile and fertile fronds of the new fern looked much alike but the two fronds of *Thelypteris* were quite different from each other

7th. A difference in the time of fruit maturity. I should that *Thelypteris* was 10 or 12 days ahead of the other.

But it is getting late and as I have more to write you you may expect another letter in few days. I spent several hours making these observations going carefully over quite a piece of ground and failed to find any fronds which did not satisfy these conditions and concluded that whatever this fern is it did not there in a favorable situation run into *Thelypteris*

R. D.

Newburyport 9/22 '93

My Friend Davenport: No further discuss the points of difference between the odd fern and A. Thelypteris both growing ~~in the~~ exposed to the sun.

8th The veins in Thelypteris were nearly all forked in the other nearly all simple

9th Spores of the odd fern are light brown of Thelypteris nearly black quite so in masses (I send slide enclosed in package by express. Slide has Thelypteris spores in one half the cell and spores of the other fern in the other half)

10th A. Thelypteris has more fruit dots to each pinnae. Taking the

pinnae about in the middle of the fern and the pinnales about in the center of the pinnae in both cases: where *Thelypteris* has 6 or 7 fruit dots the odd fern has only 4 or 5

11 The fronds of *Thelypteris* are thicker. I have been measuring quite a number of fronds of each fern with a micrometer calliper measuring the lower pinnae of the sterile fronds *Thelypteris* measures about $5\frac{1}{2}$ thousandths. The odd one $4\frac{1}{2}$ thousandths and *Nove* about 4 one thousandths which is just about the thickness of the paper which the Boston Globe is printed on. Now .001 of inch being equal to .025 millimetres

$5\frac{1}{2}$ thousandths or .0055 = .1375 mm

$4\frac{1}{2}$ " " .0045 = .1125 mm

4 " " .004 = .1 mm

I think these dimensions are approximately correct.

Not thinking to obtain roots of the two ferns I am unable to compare them.

In the bundle I send you No 1 is that variety of *Asplenium Filix-foemina* which grows exposed to the sun in dry places and which I have been in the habit of calling variety *rhaeticum* and No 2 ~~is~~ are specimens of the odd fern growing in the sun with the pinnae folded together. I think that the resemblance between

them is very striking.

No 3 specimen when I first obtained it was similar to No 2 but taking it out from my portfolio Tuesday evening where it had laid since Sunday and placing it on the table I noticed ~~it~~ in a minute or two that the pinnae were unfolding in a curious way and in a short time they were most of them laying flat at which I was much surprised. When I found that it worked in that way I kept the other one under pressure. I do not know in what condition the other one (No 2) may be in when it reaches

you but when I send it all the
pinnae but the upper ones are
conduplicate.

Perhaps this one may unfold
also if relieved from pressure and
exposed to the atmosphere of
a warm room.

No 4 is specimen of *Thelypteris*
growing beside Nos 2 & 3 and
No 5 is the New fern growing
a few rods further on in the
shade of trees.

Probably other distinctions between
the two ferns might be made
but I think that I have said
enough to show that the two
ferns are not allied except
in the possible case of hybridity

As relates to any differences between this fern and *Thelypteris* when both are growing in wet shades although as of course you are well aware the new form grows most thriftily in the shade yet I could find no fertile fronds of *Thelypteris* in that situation. Abundance of sterile fronds but no fertile ones.

It only remains then to discuss the relations which this fern bears to *A. Novboracense* which perhaps I may do at some future time if you care to listen. My object in writing to you in this way is not to interfere with your work at all but merely because I thought that I had ascertained some points and wanted find an appreciative listener.

And now I want to speak to you on another subject. Do you remember in the letter from Prof. Eaton which I showed you that he said he had suspicions that there was a hybrid between *cristatum* and *Goldianum*. Well, last August when I ~~went~~^{went} to Mt. Toly. I was obliged to wait 4 or 5 hours for the train at Millers Falls. So I struck off into one of the swamps there and in looking about among the *Goldianums* and *cristatums* I think that I found that hybrid. The leaves were not in ~~very~~ very good condition but Dr. Noyes was so taken up with them

that I let him have them
The roots however I brought home
and if they come to any thing
next year I will send you the
fronds. ~~I~~ Perhaps if Prof.
Eaton is not going to investi-
gate the subject you might get
help from him if you care to.

Yours truly

R. D.

Newburyport 11/13 '93

My Dear Mr Lavenport.

Shortly after my last communication was made to you, I paid a second visit to Teabrook woods, obtaining considerable material and making some reflections. I have been lately looking over the material and adding somewhat to the reflections and I propose now to give you the results so far as they may relate to the fern which I have been calling the odd form.

I took a somewhat different direction this time, going to Holly Mill Woods (See Whittier's "My Playmate" verses 9815) and found that there this fern is very abun-

dant. Impact of the three forms
this seems to be the most common
I found there a large space
where the woods had been cut off
in what had evidently been a
wet place but the heat of the sun
had dried it up and here the odd
fern was growing in abundance
together with *thelypteris* & *Nove*.
I notice however that this fern
only comes to perfection in very
wet shady places in fact it seems
as if it were necessary that for a
good part of the year its roots should
be in the water.

Thelypteris also needs water but also
sun. I notice that when growing
in complete shade *thelypteris* runs
pretty much to sterile fronds.
As regards *Nove* although it does
very well in shade an wet still
I find it growing in quite

dry situations.

I till I could find these ferns grow-
ing pretty near each other.

Now I found this fern as before
said growing in the sun in masses
with the sterile fronds pretty much
dried up and blown away but
the fertile fronds were still stand-
ing with their pinnae nearly
all conduplicate like specimen
I sent you before

At that time I sent you a
specimen of odd form with
conduplicate pinnae and
one of *Thelypteris* with pinnules
having only revolute margins both
growing under the same condi-
tions.

Now I send you similar speci-

mens of the odd one to gether with one of Nove growing in the sun and collected at same time and place.

You see that the Nove is scarcely affected by its exposure. The odd fern evidently feels the ~~off~~ effects of the sun's light and heat to a much greater extent than Nove.

Going further into the woods and selecting a place where the three ferns grew near each other I dug up a lot of their rootstocks Nove and the odd one were here growing about ten feet apart with thelypteris very near and as far as I could judge growing in the same kind of soil I send you specimens which you can compare with yours

The thelypteris roots are shiny black with black root hairs and send out long runners.

The rootstocks of Nove are brown with brown root hairs and shorter runners.

The roots tocks of the odd one are brown with very short runners. Neither does the main stalk lengthen much from year to year and the bases of the former years stalks seem very persistent.

I went down to Pettingells Swamp one afternoon since I was in Seabrook, ~~and~~ to a spot where I knew that some plants of this odd fern grew, and verified these results, as I thought completely.

I noticed in places where the odd fern grew in clumps so that the fronds supported each other that the normal position of the two lower pinnae was deflexed and brought round just at right angles to the rachis; but when the fronds were declined the upper angle between the rachis and pinnae was increased just enough to keep the pinnae horizontal in both planes, which I take it is caused by the action of light. I have noticed the same occurrence in some other ferns, in *Osmunda cinnamomea* for instance.

Another thing I noticed was that the dark color of the *thelypteris* root extended up into the rachis so that with-

out looking at any other part of the fronds, I could distinguish *thelypteris* from the odd one by this mark alone.

I notice in looking at the ~~odd~~ sori of *Nove*, *thelypteris* & the odd one with a power of 60 that the indusia of *thelypteris* are minute and smooth if *Nove* minute with glandular edges and of the odd one much larger and glandular nearly all over. The sporangia also larger and longer stalked.

Spores in odd one much brighter colored than in *Nove* whilst *Nove* spores are lighter than those of *Thelypteris*.

Another point of difference between *thelypteris* and the odd one is that whilst the pinnæ of *Thelypteris* are often considerably recurved those of the odd one are at most not recurved more than those of *Nove*.

I have been looking over fronds of the odd fern and those of *Nove*, after forked veins.

Although I find some forked veins in fronds of *Nove* especially in the basal lobes yet in fronds of the odd one I have not been able to find as many as one. Perhaps you may have better luck.

Another point of resemblance between the odd fern and *Nove* is that both have the lowermost pinnæ deflexed although in ordinary *Nove* these pinnæ

are so small that the fact does not attract much attention.

I have never noticed any thing of this sort in *thelypteris*.

In looking over great numbers of these odd fronds in Seabrook that day I must confess that I found a few which I was uncertain where to place.

These fronds would have perhaps two pairs of lower pinnæ both deflexed and both pairs would be elliptic lanceolate but not as much so as in the case of the odd form the lower pairs being sometimes considerably smaller than the upper ones and sometimes not.

The fruit dots too would be intermediate in size between those of *Nove* and those of the odd one

We might of course consider them to be hybrids. No doubt they were hybrids if hybrid is the right word, but it seems to me on the whole that the facts which I have given warrant the belief that this fern is not *thelypteris* and not an intermediate form but that with the exception of a general resemblance in outline to *thelypteris* (which although it amounts ^{to} but little has deceived our predecessors) it is really *Nove intensified*. The elliptical lanceolate form of the pinnal one half or two thirds up the rachis was very marked in the specimens

which I collected in Iceland and I still think that the loss of the lower most pinnal^{the} in the *Nove* fronds and ~~there~~ consequent change in outline of the fronds has caused ~~the~~ ^{from} nearly all the pinnae of the variety to take on ^{an} elliptic lanceolate shape or at all events has made that shape more pronounced.

I would remark that although the margins of the odd fern are somewhat revolute in cases where it grows exposed to the sun yet I notice the same condition and to the same extent in some fronds of *Nove*.

If you should come to agree in the main with my con-

clusions, Professor Eaton's definition of *Nove* which we have been so long accustomed to. - lanceolate in outline - tapering both ways from the middle - lowest two or more pairs gradually shorter - indusium minute - margin glanduliferous - will need revision.

When I made my last visit to Seabrook I went by way of Merrimac to look up a plant of *marginalis* + *cristatum* which I knew of and found two more one of them however being in infancy. I secured the roots & stalks and I want you to see the fronds from the small one. I gathered some small

fronds of *marginalis* and some of *cristatum* of about the same size and would like to have you see the three beside each other.

I also pulled up a good many *marginalis* and *cristatum* roots and brought home quite a number together with their fronds but although the hybrid was our first subject still my attention has lately for some reason been directed more to this odd form.

But as this will probably be my last communication on that subject until I hear some thing explicit from you. I intend too look over my hybrid material in the near future and I was thinking that if

your views and mine should coincide that perhaps it would be as well to publish an account of this odd fern, first and to let the other one rest for awhile.

There lives and flourishes in our city a german druggist Karl Castelnun by name a man of considerable scientific attainments especially in the lines of chemistry and botany I was speaking to him about this hybrid fern and he said that he should like to see specimens

I wanted that he should also have specimens of *marginale* and *cristatum* for compar-

ison and so leaving the shop at 4 o'clock on a Saturday after noon about three weeks ago I took the cars at the shop door and rode about two miles to the further end of the city and went to a spot where I ~~then~~ knew that *marginale* grows.

And in looking after those *marginale* friends, I found another hybrid of whose existence I never suspected

The boy who went with us that day to Sealbrook recognized it at a glance and said he "That is a Dick"

When we get these two cases from the docket I intend to send you specimens and let you tell what they are.

As I view the case now it is a very interesting one of hybridity. I found only one plant but I brought the rootstock home with me and planted it after taking off the fronds.

I also want you to see my specimen of *Boottii* and *spinulosum* growing on the same rootstock which I think I have somewhere in my file.

I believe that I did not tell you that I had been over to Chebacco swamp since I saw you and looked about for the odd form but although the location seemed to be a good one and *Nove* and *thelypteris* plenty yet I could

not find a scrid of the odd one. Neither have I been able to find it in Boxford or Ipswich.

Raynal Dodge

X 1
Newburyport 11-5-'94

Mr George C. Davis, Esq.
My Dear Sir: -

your letter of
Oct 30 received and read with pleasure.

I have come to same conclusions
as you regarding the fern that I
have called the odd None ~~through~~
through my examinations of the
fern during the present year
and that the fern and in most
situations very few cases of
running together are the result
of intermixing.

Your name for it is good but
when I considered it a variety
I used to think of *unabrohumidalis*

As regards the hybrid, I am well aware that in the cases of *Carices* *Salices* and *Potamogetons* your method, of indication has been quite the proper thing of late but have not known of its adoption in the ferns

Have any of the ferns of North America been indicated in this way.

Does any one write *Campitosorus rhizophyllus* x *Asplenium ebenense* for *A. ebenoides* or *Asplenium trichomanes* x *Asplenium ebenense* for *A. parvulum*

Now this 'hybrid' occupies the same position as regards *cristatum* and *marginale* that *A. Bootii* does to *cristatum* and *spinulosum* but is *Bootii* anywhere described as *A. cristatum* x *spinulosum* ^{*spinulosum*} ~~*marginale*~~

When Prof Eator named *A. Bradlyi* did he not know as well as he ~~did~~ does at present that it was a hybrid between *rutamuraria* and *mentanum*.

If the manner of indication which you mention is to be adopted why has not it been done with the ferns which I have mentioned whose character has long been known.

They have all received a distinctive name and why not the same in this case

I have also found *A. simulatum* in several other places this season two of them being well known to you viz: Cedar Pond in Wenham and Chebacco Pond in Essex but the stations were small and I could not find it at all in

the neighborhood of Warren R.I.
although I looked in several likely
places.

Your notes on the Mexican ferns
received.

I would like to have 25 Extras
of your description of the New
ferns and am willing to pay
whatever charges are made

Raynal Dodge

P. G.

3

Let me give you a few thoughts
which have passed through my mind
since writing my note

I wonder if this fern you have
called *Dryopteris simulata* is not
the North American representative
of the European *Notholaena cuneata*
I wonder if they are not both descen-
ded from the same stock and if
they will not get further apart
as time rolls by

I wonder how far north the
typical *Notholaena* grows. Not far
I should judge for it is late in
fruiting

I wonder if the typical *Notholaena*
is not an introduced plant
here or rather an adventitious
one.

I wonder if our beeches and
birches and other many other

which have been given distinctive names differ from the European forms more than this *simulata* does from *more*

I wonder if the illustration of *Aspidium thelypteris* which is given in Anna Pratt's Ferns and Flowering plants of Great Britain is any thing like the European form of the plant. Two small pinnules for the lowermost ones.

If that is so our *thelypteris* is not like theirs

And finally I wonder where I can get specimens of *Asplenium ebenoides* and *Botrychium lunaria* of New England growth. Underwoods in his Native ferns and their allies give them both from the New England states

Dodge

✓

Newburyport 1-19-95

Mr George E. Davenport

My Dear Sir: -

Yer separates received and my
only excuse for not acknowledging
their receipt is that I received a few
days previously some separates from
the Gazette office and so when yours
arrived it did not so much attract
my attention although at the time
I had given mine all away
I thank you for the same

The only criticisms I have to
offer on the article are that you
give Seabrook as being in ~~Mass~~
Massachusetts instead of New
Hampshire and that you take
the grounds that hybridism

in ferns is a rare occurrence in
nature. where as I think it to be quite
common

I have accumulated quite a fund
of evidence on this point some-
of which I think is going to surprise
you

I wish you would bear in mind that
I would like to obtain *A. ebenoides*
and *B. lunaria* If I had these
and *Selaginella selaginoides*
and *Equisetum littorale* I should
have a complete collection of
the vascular cryptogams
of New England ninety eight
species and varieties

Underwood in his "Ferns and
Fern allies" gives both *ebenoides*
and *lunaria* from Connecticut
but I do not know his authority

Much obliged for the credit
you give me in the article in
the Gazette.

Yours truly

Raynal Lodge

Newburyport 6/28/95⁷

Mr George C. Davenport
Needford
Mass.

My Dear Sir, your note of March 30
was duly received and I feel the
force of your remarks regarding
the disinclination of Mr Meehan
and other botanists to admit the
hybridity of ferns but I know that
it is a fact of very common occur-
ence.

Mr Meehan in his Native Flowers
and Ferns of the United States
Series second. Vol 1st page 113
gives an illustration of *Asplenium*
stenocladum and also an account
of the discovery of the same

and a history of Mr Scott's attempts
to attract the attention of botanists
to the plant in which it seems
he was for a long time unsuccessful
He then goes on to say: but I quote
Mr Meehan's own words

"This little bit of history has its
valuable lesson. It teaches the student
to search carefully for facts and
when he himself is sure of the facts
not to be too easily disheartened be-
cause others do not at once see
things as he does"

To be sure Mr Meehan has only half
learned ~~the~~ the lesson which he him-
self gives out for he thinks *A. el-*
noides to be a species and gives
his reasons for so doing but his
philosophy is good

By the way it may benefit you
to have a look at the illustration
in the volume of which I am
speaking

I think you will see there the

lopsided dont know what to do 3
with itself look which is seen in
so many plants of *A. cris. marg.*
I have been very this season and
have not had as much opportunity
as usual to make excursions but
still I have been about some and
have kept my eyes open and
have received a number of good
specimens by exchange
I think now that I can ^{easily} distin-
guish the *Boottii* which is formed
from *cristatum* with typical
spinalosum and the one ~~one~~ which
is formed from *cristatum* with
intermediate and I have
got possession of all probable hybrids
in the genus *Aspidium* which
grow in the Eastern states except-
ing the one which is formed from
glaberrimum and *marginalis*
which I have never yet seen
I had some friends sent me this
spring by a lady in New York
state asking me what I supposed

they were I took the friends just as I received them and showed them to the boy who accompanied us over to Seabrook woods. I asked him to name them and he said that is a Dick Goldie anemospinuloseum which was the conclusion to which I had come you probably don't take much stock in what I have written but in my investigations into hybrids I have run across some facts which have a bearing on a published opinion of yours

Why do not *A. spinuloseum* typical and *A. spin. intermedium* mix together more frequently if they are of the same species? They do mix but not as commonly as *cristatum* with either

How is it that *intermedium* forms a *dilatatum* variety just as typical *spinuloseum* does. I had never seen genuine *dilatatum* until last autumn when I discovered

ered it in Kensington N.H. and I
was much surprised at its appear-
ance. Can send you a specimens
illustrating what I mean if you
would like them

What is intermedium interme-
diate between. It surely is not
intermediate between spinulosum
typical and dilatatum. It seems
rather to me to more parallel
with it

Is it not likely that spinulosum
is an introduced form whilst
intermedium is a form that
has been thoroughly American-
ized

I struck a patch of *B. matricariae*
folium last week that would
do your eyes good. It was a bit
late for good fruit but the
size of the patch was a wonder
to me. It was about two rods
wide and 30 rods long and
the plants were so numerous
and nearly all over it that it

was impossible to step without crush-
ing from two to a dozen of them.
Some of the plants were fifteen
inches high and they would have
been in full fruit I should think
about June 15

The same day I discovered
an other lot of *B. trychium*
growing in sphagnum-amongst
this tall *Cladonia sensilis*
The plants were all about 2 1/2
inches high not mature very
simple in structure having
about four sporangia on
each side of the fertile part
whilst the sterile part was
uniformly three lobed with
~~the~~ its tip bending down over
the fertile ~~part~~ which was not
reflexed According to your
rules it seems to have been
B. lanceolatum. but it seems
to me to be a curious kind

I have raised Clarence Loun-
in New York and Mr Adam in
Canaan Ct and they have both
promised me to look for
Asplenium ebrioides but I don't
suppose that I shall get any-
thing out of it

Raynal Dodge

✓

X

Newburyport Mass 3/26/96

Dear Mr Tavenport:-

your note
of Aug 13, 1895 was duly received:
also recently and except nomenclature from the B. G.
I judge from your remarks
that you have about given up
the idea that *A. spinulosa inter-*
media is a distinct species but if
you have I haven't. This adap-
ted form of *intermedia* is some-
thing more than a mere varia-
tion. I could show you two
hundred plants growing
together and every plant would

have dilated pinnules some of the
pinnules being 4 and even five
inches long. I believe that most
of the variations come from mixing
with typical spinulosus - which is
not very usual. I cant understand
how it is ~~that~~ that all our tall
and nearly all of our native flower-
ing plants are distinct from
the European sorts when we have
so many of the *Fidicinia* common
to both continents. I suspect that
some of these things have been
planted unknowingly.

Please give me further information
about this book you speak of. VIZ.
"Ficus fifty years in fern growing."

I have not been following up
my investigations on the *Aspidium*
hybrids but have not given the
subject up at all

The fact is, last season I started
in collecting the *Isotaceae*

3

If you see the "Linnaean fern
bulletin" you are probably aware
that it is intended in the July
number to have a "symposium"
on *L. simulata*. (They are determined
to call it *Dryopteris*) Now the
editor of the publication has
written to me asking me to
contribute. He also writes that
if he could get a good drawing
he would give an illustration
of the plant. It occurred to me
that you wrote something about
a drawing of this plant which
you at one time was having
prepared and I thought that
I would consult you before
replying to him. As the number
of the bulletin is not to be published
until July, perhaps a photograph
of plant taken say June 10 would
answer the purpose

4

and before the ponds froze up
I managed to get about two-
thousand plant and a friend
whom I interested in the subject
collected about twice as many
more. He moreover having
much spare time at his disposal
has corresponded and received
plants from about every one
in the country - now being who
has investigated these plants
and I think that we will
shed a little light on this sub-
ject before long.

I intend to pay more attention
to the *Aspidium* this season
We have discovered a new
species of *Isotria* at Trichling
Falls about a dozen miles from
this place & and I had intended
to have published an account
of it before this time. It is a
very striking species

Do you include the fern allies
in your collection at Horticultural
Hall. I send you ~~my~~ check
list including the N. A. species in
which I have marked those which
I may be expected to furnish you
if you want any of them.

I am going up to see that
"dried garden" of yours. Perhaps
I may have some plants
of even the ordinary species
which would be an addition
to your collection.

I intend also to look over
some of the ponds in your
neighborhood this season
after "Lullworts" and especially
I want to find that *Glacustris*
which is reported from Fresh
pond.

Yours
Raynal Dodge

X

Newburyport 5/25/96

Friend Lavenport:-

I have got a nut to crack and a thick shelled one. I am probably to write for to late a list of the vascular crypto-gams of New England arranged in the order of their fruiting said list to be complete and including all the important varieties. The Manual as I long ago found is not reliable in this respect being very indefinite and often at fault.

Now this pamphlet possibly will have considerable circulation

in this section of the country and the question arises as to what I am to call the plaguey things I tell Mr Clute that if I adopt Underwoods nomenclature you will feel like giving me a thrashing the next time you see me. I have been thinking that perhaps I could adopt an intermediate course by giving both names in cases where required. What do you think about this.

At any rate I mean to include *A. crisp marg.* in the list

No I never sent Mr Underwood any specimens neither did I ever correspond with him on the subject but I did last summer inquire from Mr Clute why he had omitted

the hybrid fern from his list, to which he replied that it was because Mr. Woodward had decided that it had better not be included and I let it go at that.

Yes, I should much like to go ~~at~~ to Bedford and spend Sunday with you and will make arrangements with you in a couple of weeks.

In my notes on *A. simulatum* which I have written for the Bulletin I give a short account of my sending the first specimens to Prof. Eaton and with them friends of the hybrid and say that "he decided that they were undoubtedly friends of a hybrid between *A. cristatum* and *A. marginale* and advised me to publish a description of the plant.

4

I think that I showed you
the original letter when we were
sitting in Crooked Pond land.
Glute by the way is to make the
drawing for A. simulatum him-
self. I am to send him specimens
for the purpose from my her-
barium. I wish that he had
fresh plants to work from
as I should like to have him
see the retrose position of the
lower pinnae but simulatum
at present is represented in
this section by little green
balls on stems three or four
inches long whilst *Nere*
and *Thelypteris* growing
within a few feet of it are
about a foot high. I went
and had a look Saturday
afternoon

I will send you plants of
Isaetes Eatonii when I get
more but my stock at present

is quite limited and the locality
Trickling Falls New Hamp-
shire is nearly inaccessible from
these parts. I expect however
next July to make a trip up
there and will be sure to
remember you. I forget
whether I told you that
I have named it for Mr.
Abraham A. Eaton of Leabrook
N. H. who first attracted
my attention to it.

I do not want you to think
that when I offered to give
you specimens of fern allies
for your herbarium that
I meant it as a hint for
you to give me ferns for
that was furthest from
my mind at the time

Raynal Dodge

~~9. Consider Mr. Dodge's plant to be~~
~~*P. angustifolius*~~ and the specimens
~~in no way different from specimens~~
~~previously collected and described.~~
~~W. E. D.~~

Newburyport Aug 11/89

Friend Tarenport.

I send by same

mail as this plant of the new
Quillwort. Thus far we have
only found it on the "Flats"
at Ponon Station East Kingston
N. H. where it grows in considerable
abundance and is probably to
be found in similar situations.
These flats are a level piece of
fresh water marsh as far as I
have explored should say it
was about $1\frac{1}{2}$ miles long and
a half mile wide with Ponon
river running along near the
middle of it.

The ~~other~~ species of *Boetes* growing there are *echinaspora Braunii*, *echinaspora Bertii Engelmannii*, *riparia* and this one besides another which I have not as yet sufficiently studied.

This species (*Eatonii* which I call after Aln. Alcock A. Eaton of Geabrook N. H. who first noticed it) is found in ~~the~~ situations which are covered with water from November until about the middle of May during which time it grows these long leaves usually about 18 inches sometimes 24 inches and in one instance 28 inches long. As the water recedes the long leaves being left exposed to the air and sun die away and are succeeded by shorter ones about six or eight inches long and the plant continues to grow

these leaves and fruit all summer.
 It is to be noticed that the
 plant does not fully mature its
 spores until the long leaves come
 off and the plant is exposed to
 the air; consequently the macro-
 spores on the long leaved plant
 I send may not have the sculp-
 ture on the macrospores well
 defined but on the shorter leaved
 specimen they will probably
 be found mature. These macro-
 spores ~~are~~ would be considered
 very small even in the smaller
 species of Isoetaceae. They are
 of remarkable shape and of
 peculiar sculpture. One plant
 was found having a "tub" $2\frac{1}{4}$
 inches in diameter and
 having 175 leaves, making this
 the largest of the North American

species and probably on the whole
larger than any described by
European authorities.

I am sorry that
I disappointed you in June
but the fact is I was busy
and unavoidably detained
here in Newburyport the last
three Sundays in June

Yours very truly

Raynal Lodge

P.S. In pressing the specimens
I send it is best to cut them
in two the shorter way if the
full change driers several
times and if necessary to
bind the leaves being ^{they are} fragile
around in a crane woven green ^{the} ~~the~~

Newburyport Aug 5 1896

My Friend T. A. Sargent:

You say that you think my new quillwort to be *I. Engelmanni*.

You gave it a too hasty examination. Perhaps you examined the spores when green. Nothing can be learned in that way.

As I have collected and examined many hundred plants of *I. Engelmanni* I think that I have got to know it by this time.

Moreover I find no account of its growing leaves

18 inches long and with a bulb
 $2\frac{1}{4}$ inches in diameter like one
 of this species which we found

I recognize at sight when growing
Impatiens. *Tuckermanni echinospora*
Braunii. *echinospora Berti Engelmanii*
 and *Catani* and I think that that
 is well as Dr. H. H. H. can do

The longest leaves on any specimen
 of *Engelmanii* which I ever
 collected were 16 inches

I could just here
 write a good many pages giving
 differences between *Catani* and
Engelmanii but instead of so
 doing I am going to enclose in
 another envelope two dried
 plants one each of *Engelmanii*
 and *Catani*

I shall also send a couple of wooden sticks containing spores of these plants and cover the holes with a piece of paper. By

cutting through the paper you can gain access to the spores which will be loose.

In order to render the affair more certain I will send *Engelmanni* from several localities but I cannot well spare more than one plant of *E. ateni*.

Another point in this connection is that I sent you plants taken from the water but *E. ateni* does not usually have well matured spores until these long leaves fall off and the sporangia have access to the air and sunshine but I am ready

to be judged by the plants of
last autumn which I now send.
You may hear something further
concerning *T. Hudsoni* later
on and you need not be surprised
if you hear of another "guilluast"
from this locality before Christ-
mas

Very Truly yours

Raynal Dodge

P. S. Please notice: that the spore sculpture
is labyrinthiform convolute instead of form-
ing a net work like *Engelmanni*; that
the spores are much smaller and that the
commissure are very wide in some speci-
mens spinulose and that they form
^{very} a small angle with the equatorial
plane. Use an inch lens and a com-
pound microscope. Let me know ^{of them} yours

X

Newburyport Mass 8/14/96
 Friend Davenport,

I am very
 sorry that you can not accept
 my guillemort as new but
 fortunately it has been accept-
 ed by every one else interested
 in the family to whom I
 have sent specimens.

Since last spring
 we have sent out about
 fifty plants to various indi-
 viduals some of them experts
 and yours is the first objection
 I have heard to accepting
 this as a good species

Yes I have two copies
 of Engelmans monograph

one pretty well used up.

I was aware of the dimensions Dr Engelmann gives for *E. engelmannii* but they are not as large as are mine and besides the dimensions refer to his var. *valida* which has never been found nearer than Delaware

I have a plant of this from Warriors mark Penn. but it is not at all like my plant.

Remark the thin fragile laminae forming the sculpture of *engelmannii* "delicately honey comb reticulated" to quote Dr Engelmann and then the twisted convolute thick walled marking on *Catani*

See the commissures perfectly straight whilst Engelmann expressly says of the family that they are arching. Notice also the low angle with the Equator.

These differences between the two plants are only examples there being ~~the same~~ similar ones in their internal structure but I can not go into that subject now.

I forgot to mention in my previous letters to you that this plant is dioecious.

I am sure that you are on the wrong side of this question.

P. Engelmannii grows with this species at East Kingston as a rule however growing nearer the water

but I go along and separate them by eye.

By the way none of the plants I have sent you contain any microspores that is they are all female. Any plant of *E. Engelmannii* you may take you will find to have microspores in abundance unless it is very small. This is a good way to distinguish the two species.

I think that I know a little about the Isactaceae of this region. I have read three of Brauns works in German which I read nearly as well as English and I and my hard have about five thousand plants of this order which we have collected during the last three years

and most of which we have examined. Moreover we have plants of all the species described as growing in North America besides a few from the South as yet undescribed.

I do not find that Dr Engelman cautions against distinguishing species by the sculpture except in the case of microspores.

Another point I wish to mention is that in my opinion these various species of *Isaetes* as described and limited by Engelman to a certain extent mix together but I have never

noticed one thing of the sort with
S. Engelmanni. It is always
Engelmanni even when growing
 among other forms and I consider
 it to be the most constant form
 we have never varying much
 from Braun's description
 or varying at all except in
 size.

I send ~~an~~ by same mail
 a photograph of *S. Eatonii*
 the plant being pictured in
 its summer dress the vacant
 space between the bases of the
 new leaves and the outer edge
 of the trunk being occupied
 by the long winter and spring
 leaves. The sporangia remain
 to a considerable extent after
 the leaves have decayed down
 to their bases.

This reminds me to say that whilst bast bundles can always be found in the leaves of Engelmann this is not the case with Eaton many leaves and in fact many plants being destitute of them and curiously enough this conflicts with Dr Engelmann's classification.

An interesting discovery I have made is in relation to the composition of the integuments of the microspores. Engelmann, Braun, The Micrographic Dictionary and other sources of information which I have examined give the impression that this "chalky white crust" as Engelmann says, is organic or calcareous but with

the assistance of our local chemist
I think that I have demon-
strated that they are pure
silica or nearly pure.

I have written an article
for Blute on the Isactaceae
of this region in which I
discuss this subject further

The next copy of the Bulletin
I can send you a set of
Isactes of this region if you
would like them.

This is probably as
long a letter as you will care
to read but there is another
subject I would like to mention.

You probably noticed
in the last Bulletin that I
was to write a little sketch of
the vascular cryptogams of
New England. I have finished

writing up the allies we have
 got into the genus *Aspidium*
 in the Filices. When I get
A. simulata and *A. cris & marg.*
 written up which will probably
 be in a few days I propose
 sending a copy to you to
 find whether the descriptions
 meet with your approbation

With the highest esteem

Raynal Dodge

The ~~specimen~~ ^{nearest the top} with indistinct sculpture
 the one ~~to the left~~ on the photograph
 had its siliceous coating removed
 by the action of caustic potassa

X
Newburyport Aug 22 '96

Friend Lavenport.

I have been looking over the "Flora of Middlesex Co" a copy of which you kindly sent me some time since and I notice that there are three omissions of Vasc. Crypt. in the list ~~where~~ whose places I think might perhaps be filled. I refer to *Equisetum litorale*, *Equisetum scirpoides* and *J. Engelmannii gracilis*

It occurred to me that perhaps you or some one in your vicinity interested in Pteridophytes might perhaps like to hunt them up and I am going to give you a few hints from my own experience.

Equisetum litorale although given both by ~~Wm~~ Gray and Underwood as occurring in New England in Vermont (Shores of Lake Champlain) is in this neighborhood one of the most common forms in the whole order. The banks of the Merrimac are lined with it and it extends up into all the inlets and small creeks. The authorities in this country have evidently got most of their information from Middle in his "*Monographia Equisetorum*" but I find Middle does not describe it right as I make it out. He says that the spores are always abortive but the fact is this plant produces three kinds of stems. One the normally sterile running to a long point

that is to say with a long caudate
 acumination. This is the stem
~~which~~^{and} by which it may be recognised
 at ^{any} time in warm weather growing
 in such situations as limusum
 grows. I think that you would
 find plenty of this growing
 on the shores of Charles river
 The stems producing abortive
 spores quite numerous grow in
 among the others often in mud
 You will find them with
 these immature spikes about
 the latter part of May and
 continuing until nearly July
 These stems are about 18 inches
 long when well grown a few
 inches shorter than the normally
 sterile ones. The third and
 fertile stem I have ~~not~~
 found growing only in

sandy wet soil. They are rather few in numbers 6-12 inches high and their time of fruiting is quite limited about June 1st.

I think that you can find this thing in your region

Equisetum scirpoides of which we have found a good locality in Amesbury grows there on a springy bank in the shade of hemlocks and inquiry from several correspondents leads me to think that those are the conditions ^{under} which it is to be searched for. You have plenty of hemlock (*Touga Canadensis*) in your neighborhood and probably also the springy banks associated with it

Prof Eaton is mistaken I think in giving the time of fruiting for this species as midsummer. I saw it down year after year being always too late until I finally found it in fruit the first week in May about the same as *Equisetum arvense*.

Dr Engelman gives the location of *Isaetes Engelmannii* as ponds and ditches rarely found in slow running streams. Now my experience is that this species is nearly always found in water where there is a current. In most places it seems to grow in small brooks to the exclusion of any other form. Very common here in bays. But now all the quillworts grow and flourish well.

List of

only in the open sun and when
 growing in breaks of course
 some of the spores are carried
 into places shaded by trees
~~etc~~ and is found growing
 sometimes immersed but often
 high and dry on the bank
 in such places growing some
 times very long and slim and
 with few or weak bast bundles
 and this I take it is Engelmanns
 var gracilis. You can find lots
 of it in your neighborhood.
 I thought I would mention
 these facts to you now but
 you will ^{find} them touched upon
 in the next Fern Bulletin
 Mr Eaton intending to give
 an account there in of *E. litorale*
 I send you plants of the
 three species I have mentioned

although the *Equisetum* is not
in fruit my fertile plants having
all been disposed of

I will send the grullworts
later but I am sorry to say
that I did not give my
long leaved specimens of *Equisetum*
sufficient attention. They have
all spoiled and as it has got
to be too late to get them
this year I shall not be able
to send you any now but
will send some to you in
their summer dress

Raynal Dodge

I enclose my abstracts in relation
to the two new ferns

X

Newburyport Oct 14, 1896

Yes Friend Davenport, you are right in thinking that I never sent Prof. Underwood friends of the hybrid fern.

I never corresponded with him but once which was several years ago, and in relation to quillworts. About three years ago I wrote Prof. Britton asking him some questions in regard to *Aspidium*

cristatum Clintonianum

He replied that they had no specimens in the herbarium and requested me if I succeeded in securing any to send some to Columbia College. The next summer I obtained plants from very near the typical locality had them compared with Judge Clinton original specimens now at Buffalo N.Y. pronounced genuine and sent fronds to Prof Britten. At the same time I sent him one sterile and one fertile frond of the hybrid but no rootstock, I sent these hybrid fronds, (which were

very fine and characteristic in
 fact the best I had) so that
 he might see how they
 differed from Clintonianum.
 When I told you the story
 before I cut it short and
 perhaps you got a wrong
 impressin. It is pretty hard
 sometimes to make a man
 see a thing as one sees it
 him self. This comes often
 from inexperience on
 the other mans part. If you
 were to take Underwood
 on a little tramp and show
 him the situation you
 would I think make him
 a convert. for there is

no doubt but your position is the right one. I have a friend just over the ~~at~~ New Hampshire line whom I consider a very acute botanist Mr. Alvah A. Eaton whose name you may have several times seen in the Bulletin. He had an article on *Ophioglossum* in the last number. He was disposed to doubt at first but he has long since become a convert. This book of mine takes up so much of my time that I have not had a chance to get together your Lillworts as I want to send some slides with

them and have not had a
chance to make them
I may send you up some
proof sheets soon for criticism

Truly

Naynal Dodge

Newburyport 19/11/96

Friend Davenport -

It seems to me just now to write you that these two facts will have to come out to you as well which perhaps it will do no harm for me to remind you of. I mean in connection with *L. simulata*. The first is that preserved specimens of this form do not show its true shape when growing. The lower portion being inflated when they are flattened out they become deformed. Another is that in most collections the specimens are taken by some larvae which cause the cast sometimes to be very imperfect. After considering it over I find it is best to send a few in good condition.

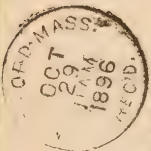
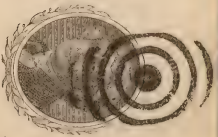
Doubtless

POSTAL CARD - ONE CENT



United States of America

THIS SIDE IS FOR THE ADDRESS ONLY.



Mr Geo E. Davenport

New Bedford

Mass

J
X

Newburyport Nov 8, 1896

Friend Lavenport,

I sat down

a few minutes ago to reread your article on the hybrid fern - which by the way is a very good one - when I had a new thought occur to me which I am going to give you while it is fresh.

Mahan remarks in Vol 1st of Series II of his "Flowers and Ferns of the U.S." ~~that~~ in connection with his illustration of *A. ebenoides* (I quote from memory) that attempts have been made to hybridize ferns by sowing the spores very thick so that the prothallium will be pushed

up edge ways with the idea of causing the antheridia of one prothallium to enter the archegonia of another. But he remarks that not much success has been attained in this way and says something about there not being one chance in a million of this occurrence taking place.

~~The~~ "The minute anatomy has been carefully studied in only a few of our native ferns and fewer still have been watched through the phases of their life history" (Underwood's Our Native Ferns, page 74)

"In some species notably the Ostrich Fern the two kinds of sexual organs are produced on separate prothallia so that the plant becomes dioecious" (P. 20

But how if either *A. cristatum*
 or *A. marginale* is dioecious
 Who has ever investigated this
 If any one it is probably Douglass
 Campbell. I have not access
 to his book on the Development
 of Ferns and Mosses but it
 is quite evident that if one or
 either of the parent ferns of
 our species produces dioecious
 prothallia that then this case
 of ours become entirely clear
 for there is evidently no reason
 why the antheridia of one sort
 of prothallium should not enter
 the archegonia of an other sort
 and as the ferns are very near
 allies they ~~are~~ would probably
 fertilize it this occurrence ta-
 king place just where we
 should expect that is at the
 foot of dexteritis where the

two ferns meet. At any rate that is the way I am betting until I find out more about it. If no one has happened to think that the ~~question~~ fact of dioecy has a bearing on the hybridity of ferns I don't know but what I shall investigate it myself.

Respectfully

Raynal Todge

✓

X

Newburyport Mass 12/9/96

Friend Davenport-

I am glad

to see that you are moving
along towards the position
I have sometimes taken in
discussing with you the sub-
ject of hybridism. You write
that Prof. Underwood objects
to describing hybrids as not
being specifically distinct
but I am foolish enough
to think that he has descri-

led three hybrids in Britton's New Flora and that I could prove it if I was circumstanced so that I had an opportunity. Besides this I know of several others which are native to these New England States and have specimens of them.

The advocates of this system of searching out the original name and of making every thing to conform to it are going to find themselves in a peculiar position eventually. The number of recognised hybrids is going to increase and meanwhile

some plants now considered
 species will be shown to
 be hybrids so that hybrids
 will have two different
 kinds of names. What will
 they do about it. Now don't
 you think that I am talking
 wild. I can form a pretty
 good judgment on a subject
 when I know all the cir-
 cumstances, and the best
 place to find out the
 circumstances in this
 case is in the woods and
 swamps. Underwood I
 think received the hybrid
 from Dr Graves of New
 London Ct. I suggested to

the Dr last winter that he
 look for it the present year
 and he sent me some fine
 specimens awhile ago as well
 as of *S. simulata* and *S. Tuck-
 ermanni* the latter of which
 has previously only been
 reported from your neigh-
 borhood. I may at some time
 join your Hart. Soc. but I
 am not much of a joiner.

You probably remember
 that I wrote you awhile
 ago relating to the crust on
 the macrospores of the
 Isoetaceae being composed
 largely of silica and that I
 thought that it had escaped

the observation of the german botanists. I have had some spores analyzed and find that the crust is about 90% silica. Now I wish that you would do me the favor of copying and sending to me just what Hofmeister says about it. I had a person from the city here go to your library and look the matter up but he did not understand very well what was wanted. You have ~~been~~ already been obliging enough to consult Campbell in the matter and I have Sachs ~~Lehrbuch~~ Lehrbuch which ~~does~~ not make no mention

of the matter. Hofmeister
 does but I would like to
 know just what he says
 Possibly too you may have
 a later edition of the Micro-
 graphical Dictionary (English)
 than I have which may
 have some reference to it
 There is nothing in the
 older edition.

The fact is there spores
 sweat almost pure silica
 having the appearance of
 carbonate of lime and as
 near as I can find out ~~that~~
~~as the~~ the German botanists
 have not taken in the situation
 I am not going to use the
 photograph of G. Batoni

which I sent you. The figure of the plant did not suit me so that I have had two photographs taken which will give me fuller dissections. I hope to publish in the January number of the Bot. Gazette.

Raynal Dodge

When I say that there are three hybrids described in Britton's Flora I include neither *A. ebenoides* or *A. parvulum*. That is a wretched illustration of *A. simulatum* in the New Flora.

Neiburyport Mass 12/21/96

Friend Davenport:-

it is all
right regarding Hofmeister.
My German friend here got
a copy and I have given
it an examination. I sent
in my Abs. last week and re-
ceived a letter to day from
Prof. Coulter ~~the~~ stating that
the article would appear in
~~the~~ Jan number. I think
that you will say that I

have dissected this quillwort in fairly good shape.

Palmer of Media Penn. writes me that he is to have a short article in the Dec. number criticising Under-woods illustrations of the quillworts especially ~~the~~ of the macrospores. Judging from what he wrote me I should say that his article was altogether too fierce.

I think that under the circumstances it would not be well for me to join the society of which you speak. If I were to become a member the

chances are that I should never attend any of their meetings. I have been in Boston but once in four years and then I only passed from the Union Station to the Providence Depot.

When you wrote me that your article on the hybrid was out I wrote to the G & F people and got 50 copies ~~of~~ extras. At the same time I sent 10 cts asking them to send me a copy ~~of your article~~ of the paper containing your article on Simulatum as soon as it was published and also asking them

to print me 50 extras. As they did not come along I sent them another letter in relation ^{to} it. You understand that I was anxious about it because I wished to place a reference to it in the Appendix of my book and was hindered for time. They wrote back that as soon as the article was published they would let me know. But they did not let me know and the first intimation ~~I~~ of its publication ~~and~~ I received from you. Then I jogged their memory again and they sent me two copies

of the paper but no excerpts
 I received the papers Monday
 and have heard nothing
 since and I don't know
 whether I shall ever get
 any extras but your writ-
 ting that you have received
 none gives me a little hope

I immediately on your inform-
 ing me that simulation was
 described Dec 2 I wrote to
 Blute so that I got it in
 the Appendix all right

Of the 50 copies of G & F
 for Nov 4 I have distributed
 35.

I expect that my
 little book will be ready

next week. By reason of its condensed style and fine type it will not be as large as I expected probably about sixty pages and will sell for 35 or 50 cts according to binding. Don't you think that most people would prefer to pay the difference for good covers.

Fig 5 and 6 certainly are transposed in the numbers for the rootstock. Moreover ~~and~~ I have dug up a large number of the roots of these three ferns where they were growing very near each other and in the same kind of soil and I am of

the opinion that the bases of the fronds of previous years are much more persistent in simulation than in the others

I refer to your use of the word lamina in my book but I am not sure that I worded it to suit you

I see that Underwood has got *B. ter. lunaroides* re-described as *B. bi-ternatum*

All to whom I have sent your illustration of the hybrid fern and who were acquainted it say that Foxons drawing is excellent.

I believe that I have not
 told you that we have found
Lycopodium alepcurvicolle
 on Plum Island. That is
 I sent ~~him~~^{Gator} down there early
 in Oct. for *L. inundatum*
Bigelovii we having seen it
 there in August and he
 came back with the
 species I have mentioned
 It had not matured its
 spores even Oct 5 the season
 here being apparently rather
 too short. I noticed that
 all the *Lycopodiums*
 were late this season
 You will find more
 of this in the next num-

her of the Fern Bulletin

I managed also to get this inserted in the Appendix of my book. W. Alphonso Merrill writes me that in the next Bulletin he gives his experience with *A. ebenoides*.

I don't know as you will care to see a copy of my book when I tell you about it. The fact is that Clute and the publication of Britton and Brown's New Flora ~~have~~ and one thing and another have persuaded me to give up the name *Aspidium*

for Dryopteris. I don't know
 as I feel like entering the
 arena in this question and
 the drift of things seems
 to be all Britton's way.
 But I wish that Under-
 wood when he decides on
 a name would stick to
 it. Now in this fern list
 of b lutes which Underwood
 is mainly responsible for
 he changed the names of
 four ^{Equisetums} ~~Lycofractans~~, that is
 they are unlike the names
 in Gray's Manual. ~~The~~
~~changed~~. He changes limosum
 to fluviale. the y, in sylvaticum
 and hyemale to i, and

spells *litorale* with one t as it really should be spelled. Now in Britton's Flora he has changed three of them back to the old spelling.

That you see leaves me in the lurch. I notice too that in the New Flora he has changed ~~Pellaea~~ *Pellaea gracilis* to *P. Stelleri* and *D. aureolecta* *Braunii* to *D. Braunii*. this last however being a change of a different nature. I will speak to Eaton regarding your so Bot. Soc. He would be a good addition to any botanical club.

Raynal Dodge

Newburyport Feb 1, 1898

Friend Davenport:

your
notes of Jan 21 & 30 came
duly to hand. You ask
if you did not order two
copies in cloth. You certainly
did and I sent your order
to Blute. You do not say
what you received. If you
have received one copy
in cloth I can send you
another immediately but
if you have received paper
covers and want two cloth
ones I shall have to

speak to Blute about it as
all the cloth covered copies
I have ~~are~~ but two are
engaged. I have half a
dozen paper covered ones.

All I have seen yet
of the article in the Gazette
is the proof. but I expect some
excerpts soon and shall
send you some. You see
I do not subscribe for
the Gazette but for the
Tarrey Bulletin and ex-
change with Eaton who
does.

I notice that your
remarks in the Gazette on
the use of the word friend

are entirely in accord with
the ideas in my book. ^(see end of letter) *

I don't quite agree with
you when you write that
Underwoods orthography of
the Equisetums are to
be considered typographical
errors. You understand
the spelling on just three
was changed for better
list and now in the new
flora they are all as in
Gray's Manual. Or else
he is careless; as for instance
in his list of the ~~plants~~
ferns he found in Alabama
as given in November No
of Gazette he mentions

Ph. ... *... ..* *... ..*

A. thelypteroides. Now this is one of the names he has given up. Speaking of *Equisetum* reminds me of a curious discovery which I made this winter. I received some specimens of *Equisetum littorale* a year or two ago from Eggleston the locality being shores of Lake Champlain as given in Gray's Manual. After I found *E. littorale* so abundant here on the banks of the Merrimac I compared the plants with Eggleston's specimens and found

that they were quite unlike the Vermont plants verging towards *E. palustre*. I am thinking now that *palustre* mixes with *arvense* making a hybrid just as *littorale* does with *arvense*. I hope to investigate this further at some time. ~~Caton's~~
 Eaton is engaged now in studying the *Equisetums* but I have never mentioned this case to him.

The fact is that there are a lot of problems in connection with the Vascular cryptogams still unsolved. New ones come

to my mind quite frequently
 I think that some one
 ought to take these Vascular
 Cryptogams say in Britton
 and Brown's range and
 study them up DuRoi's
 and all and write an
 illustrated monograph on
 the subject. I predict that
 a good many facts would
 come to light. Now is
 the time to do it as Eaton's
 work is about out of print
 selling for \$40 dollars a copy
 nothing but the perus illus-
 trated or described and
 several omitted altogether.
 I think that a man
 could spend two years

time on that undertaking
and come out whole from
the sale of his books besides
gaining a reputation

Why dont some of these
people who spend so
much money on the hot
house culture of flowers
see it in that way.

Many of the species have
never been illustrated except
by figures such as those
in Brown and Britton's
flora. I dont know how
the plates of J. Eaton's look
but if they are like the
photographs I claim that
they are the best that

have been made of any species of guillemot.

I sent a copy of my book to the Transcript and one to the Advertiser hoping that perhaps they would notice it.

Very truly yours

Raynal Dodge

* This is certainly very gracious on

The part of Mr Dodge who is wholly indebted to me for the "ideas", a fact of which he fails to make as full an acknowledgment in his book as he ought to have done.

George C. Campbell.

Ithaca, New York,

Nov. 5 1887

Mr. Davenport

My Dear Sir

I know well enough our poor scientific work, especially that which is of any value, remunerates its authors, and I am more than willing to pay what was due from every subscriber to the Monograph if he rightly appreciated its value and the evident labor and discrimination ~~was in it~~.
I therefore enclose the additional amount. Now, I know, as a portion of a price asked, yet as something that is justly due from me, after looking it over

more carefully, than before,
and working as I do
with Mr. Robinson as to
its truth.

I have not been as successful as I had hoped, about finding the rarer *Botrychia* about here, although I have collected a considerable number of rare things in other directions.

Pe. *atricaricifolia* - Mr. The
one a ~~leaf~~ of the - choice ones
that I have detected. 1891

B. lanceolatus. *Stenoplex* gl.
in B. Sunaria. *Sten.*
not looked at. *Stenoplex* gl.
in *Sten.* & only part of *Sten.*
my work. *Stenoplex* gl.
the part in *Sten.* in all
done *Stenoplex* gl. July 15, it was
very difficult to find.

117 West 43rd Street
New York 7th April 1883

Mr Geo. C. Davenport
Medford, Mass.

Dear Sir

I have your P. O. Card of
— April, and only regret it would
not be in my way to use more
than a single copy of your "Supple-
-ment to your Catalogue of North
American Insects, (if published.)"
The 'Check List' I would not want.
With good wishes, however in
connection with the publication.

I am Yours truly
Robt. Dummer Gilchrist

Mahile al.

Dec. 2^d 1890

Mr Geo. E. Drayton,

Dear Sir:

Your kind letter
in answer to mine of Dec. 1st 1890
has come this AM.

And as I shall be busy during
the Christmas holidays I hasten to answer
to show my appreciation of your kind note
& prompt reply.

I am sending you by mail a
few sheets containing a new species of *Bancroftia*,
Bancroftia obliquata (n. sp.)

" " " " " " " " " " " "

Adiantum capillaris L.

Hebe revoluta L. f. Suppl. 425, 1781. n. sp.

The second one is a form of *Bancroftia* which
I have not entirely cut down, but I
put it down as *Bancroftia*, as on my account to

what I think it is, not having any text-
book in which it is described.

Dr Chas. Mohr's "Plant Life of Ala." and
Dr J. H. Smalls "Flora S. E. U. S." do not
give any description which I can make
fit but in ^{Florida} Vol. XII. No. 2, p. 47, there is a
form *Oncidium* mentioned which may cover
this form but unfortunately I have no
work containing that variety.

Some time last Fall I sent specimen
to Mr. Britton and asked his opinion of
it, and he wrote me that it seemed
to answer Prof. Underwood's determination, &
at the time I thought so too, but sub-
sequently I have changed my opinion
as I have seen *biternation* growing &
am convinced that it is an entirely
different plant, & clearly entitled to
specific rank.

As you will notice the specimen I
sent is of same form as the normal
O. leucum & is petioled in a similar
manner. Was found growing under

Similar conditions, in similar locations
 & fruiting at same time while
 the *bitematum* is a smaller plant
 and those I found were much smaller
 only about 3 to 4 in long. (the sterile fruit)
 and in fact some were just pushing
 through (last week in Nov. in fact Thanks
 giving day) and the fruits were erect
 or nearly so, and were, semicumbent,
 too low to the ground to be in any
 great danger to be browsed by cattle,
 unless it was by sheep, while the
 obliquums & the *obliquum ternatum* (as
 I call them) were erect until cold
 weather when they have assumed a
 bronzed appearance & are entirely re-
 cumbent, & also were any way from
 3 or 4 to 10 or 12 in (the sterile fruit) &
 the fruiting one several in higher
 I have Beside the *bitematum* will
 not be in fruit for at least a
 month or two yet which agrees with
 Dr Mohr's time for fruiting. Get tape

I did not take any plants of the heteromallum, except one or two as I did not want to collect them until in fruit.

I have several sterile fronds more of the obliquum terminatum (as I call it) and should you wish and more of them let me know, and sorry I have not another fertile specimen.

I also have several duplicates of the obliquum much larger than those I sent, and should you wish any more of them let me know.

I would like to know your opinion of the Botichia after examination, as I have not labeled my herbarium specimens yet, waiting till I was sure what its correct name may be.

I have been fond of Botany all of my life, but my time being limited for the study of it, I am only able to go into the woods occasionally.

3
but try and make the most of
what opportunities I get.

I have only been working on the
ferns for 18 mo or 2 yrs and do not
feel as if I knew very much about
them.

My herbarium is not large and
any additions to it will be very
gratefully received.

I will add a list of what I have
not got, not expecting to receive
all I mention, but only to show
what I have not, which is a much
larger list than what I have.

Aspidium novaeboracense

" *fragrans*

" *marginale*

" *Filix-mas*

Asplenium pinnatifidum

Botrychium (only those as I have sent)

Cheilanthes (none)

Pellaea (none)

Scolopendrium (none)

Struthiopteris Germanica,
any of the above will be thankfully
rec^d, especially the *Botrichia*.

Can send specimens now of
Botrichia, larger than those sent today,
Woodwardia areolata

{ *Struthiopteris patens* (Sw) Kuntze. Bot. 144. 1847
 Aspidium " (Sw) Fl. Ind. 1673. 1777
 Nephrodium " (K. Hook. Bot. Beech. F.B. Vol. XII. 44. P. 105

Polypodium incanum

Can send another season, any of following
which may be of interest from the locality
from which they come, i.e. So far South.

Adiantum Canadense

" *regalis*

Woodwardia virginica

" *areolata*

Athyrium filix femina

Replum sternum

" " *f. nudum* (Barb.)

Poly podium macranthum

Pteris serrulata (adventive)

Adiantum Cap. ven'

Pteris, aquilina, pseudocaudata.

Aspidium thelypteris

" *palens*

+ perhaps one or two others which are said to be here, but which I have not found as yet.

I am in correspondence with our State Geologist (& no mean botanist) Prof E. A. Smith, with the view of getting some plants of the *Asp. ebenacoides* from the station at Havana Ala, don't know how I will come out but hope for some success, if I do will let you know in case you have not that rarity.

I am also trying to get some specimens of *Trich. Pteris* from N Ala but that is quite uncertain yet of that too.

Now my dear Sir, I hope you
 will not deem this to long & tire-
 some, but will bear with a strug-
 gling amateur, in hopes that I
 may enlist your sympathy and
 assistance & that I may be of
 some use to you, for you know
 we sometimes stumble on what we
 most want by mere accident
 Hoping to have the pleasure of a
 reply at your convenience
 I remain

Yours very truly

W. C. Dukes

259. N. Franklin St.
 Mobile

etc

Woburn Mass.

Dec 14th 1902

Mr. Geo. E. Thompson

Dear Sir;

Have sent
you by today's mail a few other
specimens, but as they were not available
to send with first lot, and hope
they may reach you safely and in
good condition.

I will try and send
shortly a number, young, sterile, fruit
of the B. biter calamus, much for you
to see what it looks like, those to be
of any use as a specimen.

I will put upon me in my
"common book" and when I can secure
a good fruiting plant will send you
some of them.

Ever very kindly yours

2
me the name and address of some
farm student out West from whom
I can get in exchange some of
the western varieties, or horses?

Hoping the plants that I have
sent may be of use to you and
that I may be able to serve you
further. I remain

Yours truly,
H. C. Deane,

Mobile Ala
Dec 31/04

Mr Geo E. Ravenport

Dear Sir:

Your favor of
24th inst came duly to hand.

But so far the specimens of which you spoke have not been rec^d. I suppose perhaps for some reason you were unable to send them when you intended, or perhaps they may have gone astray, however I shall hope to receive them in a day or two.

I am sending you another batch of Batrachia, nothing new, but I thought perhaps they might show some progression or regression in one species or the other. The *Heterotriton*? will show or ought to show some advance next and in one specimen a lateral branch shows the nervation very plainly, and

another one shows the point where the fertile frond makes off.

I shall endeavor to send you specimens of this variety at stated periods so that you can trace its advancement to maturity.

I have transplanted three plants into pots and mean to study it of nights, (my only time for study) and will then make notes as I study and embody my observations in a short treatise, for your personal or for the benefit of the readers of the "Fern Bulletin", the only thing which would deter me from the latter would be that anything which did not would smack so much of the amateur that some of my kind^(?) fellows-members would (in parlance of the day) "jump on me with both feet".

I will also send several specimens which I take to be young plants, and all found of this size & in this peculiar location, (at the head of a branch, & quite clamb with

the overhead foliage much denser than in situations where the plants of the normal form are found) seem to be more incised than those growing in more exposed situations.

I also noticed that all the plants of the B. obliquum & of the B' obliquum (with ^{and also the variegated} lunate segments) which had fruited, the sterile frond was lying down flat in a lump in recumbent condition, while the same plants while the plants of the same varieties ^{in the same locations} which had not fruited at all this season, were erect & had a fresh, crisp, & green look. - and if it was not for this fact I would be more satisfied to consider the bitermation a form somewhat farther removed from the typical obliquum, than a separate variety, but when its time of coming up is considered, its peculiar yellow cast, & the shape of its ^{small} frond, its semi-recumbent sterile frond, showing even at this date (Dec 26th) lateral, undeveloped, sterile fronds, & the embryo-state of the fertile frond, I am

loathe to set my opinion up for its being anything but a separate species.

I also noticed that I found it only in old abandoned fields, which were under fence, and at the edges of clumps of Cedars & Yewen hedges, sometimes under the overhanging boughs, but have not found it so far, in open woods where some of the best specimens of the other two (*Bolly* & *B. latifolia*) were found.

I think I have enough located to supply our wants, with plants at different stages until I gather the mature plant.

I have two friends here in Ellabille Messrs McNeil, (Parker & fillers) who are ardent admirers of Prof Underwood and they too are after the same plant for him and I am afraid that they have located my colony (it contains 1000 more in the space of about 2 acres, if so I will have to be "up and doing" to try and not be out done. They are more

5

men but we don't go out together
^{often} much, because they seem to resent
the fact that I am willing to
gather information & help from other
sources.

I am after taking what looks like
"Truth" from whatever source I find it

I have as text books, Dr Mohr's "Plant life
of Ala", Dr Small's "Flora A.E.U.S." - Gray's
"Lessons in Botany" 1891, Clute's "Our Ferns in
their haunts" Underwood's "Our Native Ferns" &
Smith's "Historia Filicum" so I back my
faith implicitly to none, but consult
all, & glean here a little & there a little

I am fixing to try next season for my
own satisfaction to try & raise an
Asplenium cheoides, artificially, in sim-
ilar lines to what is given in our
number F.B. by "your humble servant"
I meant to try the *Campylodorus rhizophyllus*
spore with both *Asplenium* ^(the incisura form) & *A. parvulum* &
perhaps with *Athyrium filix-foemina*

Mr Clute intimates in his work that perhaps

this cannot be done, except by sectioning,
but if a chondride is an hybrid it occurs
without such means, as Nature surely does
not employ any other means, but juxtaposition
or juxtaposition + it is on that line I shall
work. - but I stand not here open with
this line of speculation.

I have intended now before I had the
pleasure of seeing you, to get spec-
imens of what Ophioglossi I care, as the
Dr Mohr in his P. L. of Ala, only gives
two varieties O. Cratolophoides and O
pusillum, the later he says "very scarce".
while Dr Small gives another, viz. vulgaris
to Fla & I think possibly it may be
with us also, as both Fla & Ala are
I think included in the "Louisianian
area" - of Bottrichius, Mohr only gives three.
viz. ablyq. heterotum & to Mobile to a re-
duced form of B. virginianum - viz B.
gracile, the later I have not form yet
but hope for better luck another season.
There is in the lower part of an

adjoining Co. (Baldwin Co) on section
lying opposite mid flower Tr., where
there is said to be several forms
of ferns belonging to the triticas,
I am planning to take a trip
there next Spring, if I do and should
happen on any "finds" will let you
hear from me.

Now my dear Sir: I did not intend
to inflict such an offense upon
your good nature when I began
but must beg you to excuse me
this time & promise not to do so again
but the study of Botany is to me the
recreation to a man closely confined
all day, whose means, unfortunately,
are not commensurate with his love
of Nature.

Hoping that you will bear with a strug-
gling amateur & extend occasionally a
helping hand. I am

Very truly Yours
W. C. Dukes.

P.S. The thought occurred to me to give
you the references given in Mohr's ^{Bot. Determinations} P.S. of Ala.
for while you may be familiar with all of them
there may be one which would be of use to you.

"*Botrychium heterotermum* (Lam) Hudw. Bot. Jay 22: 407, pl. 21. 1896

Osmunda heterotermata Lam. Encycl 4: 650. 1797

Botrypus lunarioides Michx. Fl. Bor. Am. 2: 274. 1803.

Botrychium lunarioides. Sw. Syn. Fil. 172. 1806.

B. ternatum var. *lunarioides* DC. Eaton Fns. N.A. 1: 148, t. 20, f. 3. 1877

Eaton, Ferns N.A. 1. c.

Herb. Geogr. Surv. Ala. - Herb. Mohr -

Type locality -

'M. Michaux a découvert cette espèce dans la Caroline -
méridionale' "

The above is not intended in any way to instruct
or enlighten you, but merely given in case
they ~~may~~ throw more light upon the subject
(yours)

W. C. C.

Feb. 11.

Jan'y 1st '05

At the risk of being considered tiresome I
will add a few more lines.

This evening I took a short turn in the woods
to procure a few seeds of *Polypodium*, ~~viscousum~~
to send to a correspondent in ^{where} Ohio, I came
across one or two plants of *Habenaria*, which
I dug up and send with the others to you.

The only reason that I thought them of
sufficient interest to send was, because they
show a peculiar form, and one which I have
not heretofore observed.

You will notice that they have sprouted, as
it were, a secondary sterile leaf, the old
original sterile leaf has evidently been
cattle-browsed, and I should judge from
the small part of the leaf surface left
that the frond was originally of the typ-
ical ^{linear-lanceolate} ~~oblongum~~ form, as were all the ^{other}
specimens immediately about them, which
were more protected than these injured.

ones, but you will notice that in form
and size the secondary sterile leaf
is very similar to the small specimens
of heterostachya I send.

I am familiar with the fact that many
plants try to retrieve the injury done them
in their early stages of growth, giving
rise to the form obtusolobata in *Onoclea*
& perhaps in *Woodsia*, but this is the
first instance I have noticed any such
occurrence in the *Botrichia*.

Hoping that this will afford sufficient
warrant for a second post-script to a
too long letter under ordinary circumstances.
I am &c.

Yours very truly
W. C. Cress.

Mobille Ala Jan 5th 05

Mrs Geo E. Lavenport;

Dear Sir;

I am very glad to report that the pkgs of specimens have come to hand safely, and I am delighted with them, and want to express my thanks for them, and the generous manner that you sent

I shall certainly experience much pleasure in studying them, especially the Bottrichia

The notes accompanying the package have been carefully read, and much enjoyed, and have made me realize that I am indeed a novice, nevertheless it gives me food for thought, and also opens up new lines of study to me.

The only place which I can see that you have not thoroughly investigated is the Chalcididae, but even that I am by no

certain ~~that~~ you have not fully investigated.

The specimens from the West & Alaska were all new to me and shall have very careful attention.

Your treatment of the Botrechin, in connection with the two specimens last sent you have shaken my faith in its determination as a separate species, but I shall give it closer attention from now on, both in the field & those I have growing in pots at home, so that if there should develop anything abnormal I may catch it.

One pot I have decided to stimulate with ^{very humus} show manures, bone-dust, slacked-lime &c. to see if I can hasten the time of fruiting and also increase the size of the sterile fronds, which it I do will I think make it more valuable.

to those I have sent you and which
you may call be described as a
series of leaves.

One of the plants in the pot seems to
have already overgrown the others & is losing
its dwarfed look & the sterile blade is
becoming more triangular in shape &
the segments look to me as if they are
becoming longer petiolate, which if true
will bring it much nearer in form
to the terminal form above referred
to & is also losing its peculiar sessile
or semi-sessile character it first had
when transplanted.

I have sent a lot of sperm galls from
a colony in which green host forms
the normal abscissa & the termination
and to side, to a friend of mine
near Philadelphia who is so situated as to
be able to grow them under glass.

are circumstances and shall ask
him to make up test forms are
produced from these spores, for if
so that will be additional evidence
that they are but different forms
of the same species.

I shall also try myself in the same
line. Later on see Mr. Miles's sug-
gestion in N.B., Vol. 11, No 3, p. 13, is
that they & the Tecobolus are de-
pendent upon a fungus being pres-
ent for their perpetuation.

There are now two questions I like
to ask, which I be obliged to you
to answer for me at your convenience
One is how long-lived are spores gen-
erally? Will they keep ^{over} from one sea-
son to the next?

Another is if you know who has
Synopsis Filicinis for sale? I have

written several parties, but so far
have not been able to locate the
publisher.

Holding myself in readiness to
serve you in any way I can
I remain

Very truly Yours
W. C. Butler

Wabash Ala Jan 1st 88

Mr. L. E. Garrison,

Dear Sir, Friend,

I have
sent a few specimens of *Asplenium -*
thoroides, from my friend Prof. Smith,
our State Geologist, and an ornamental
botanist also. I am sending you a
specimen by the same mail as
this,

I am sorry I could not send
more, but I only got a few, but
hope this one will be of service to
you.

Prof. S. writes me that the
extent of this fern at Wabash Ala
is not near so large as it once
was, and has been drawn upon so
freely that it will perhaps become
"exhausted."

He also writes me that "the plants should be well poisoned by brushing them over with a solution of corrosive sublimate in alcohol, to preserve them from insects." The above may be entirely familiar to you, but at least mention it in case it is not.

I am having some fun trying to settle the differences between some specimens sent me from A.H. & from Peru, one is labeled *A. cristatum*, another *A. Baillii*, another *A. Spaulsonii* *interius*, & a *Spaulsonii* *dilatatum*, it certainly makes me puzzled,

The *T. helianthum* shows no signs of a fruit spike yet, but I have my eye on them, and the person who "gets there" before I do has got to "be up and doing"

I have found another small cutting

Since writing your book, but they do not seem to be plentiful around Mobile, at any rate I have not come across any localities.

My plants in pots at home are growing farther apart, or so it seems to me one is decidedly retarded as I wrote you & looks more like the seeds I sent you in the Fall, & if it was more stocky it would resemble more a spec. I have from Mr. J. C. Duckwister, Gulfport, Miss. (labeled *B. Habermi*, & I think called ^{Cassia pub. n. 11} ~~as~~ *H. f.*). I have no text-book giving that var so do not know much of its history & can only compare my growing plants with my herk spec.

I shall make another trip out in the woods soon and if I see any change worthy of note will send you a

plant or so if not well merely ^{the} notes & write you, leaving the plants until the fruit develops.

At your kind suggestion I have sent to Mr. Skott, Tacoma Wash, in hopes to be able to obtain from him *D. occidentalis* & *salicifolium* under with these & *Brickner gracile* (which I think goes in the *helleb.*) I will have about all the you ^{are} know of, in my herb.

I am in correspondence with two parties in N. Alta with the view of trying to get a *Potentilla* & *Alabamensis* *A. sulcatifolium* & other ^{of the} rarer forms from that section, should there be any among them, if I am fortunate in getting them that would be of service to you. Let me know and I will put it down in the memo. book I keep for that purpose.

I have also written to a young friend
of mine who is in Panama, as deputy
to our Consul there, and I am in hopes
of getting something interesting from
him. Would like to know that section
interest you?

I am also trying to get some of the
S Fla ferns, especially *Adiantum tenerum*.
Do you know any collectors in Fla
other than Mr. S. Rapp of Dunwoody?
I am in I have consumed too much of
your time I will close.

Hoping to have the pleasure of
hearing from you again some time
at your convenience. I remain
Very truly, Yrs
W. E. Coker

Mobile Ala. Mar 1st 05

Mr. Geo. E. Danvers:

Dear Sir:

I take the liberty
of inclosing two small photographs,
which I would be glad to have you
look at with your eyes.

They are from two of my specimens &
have puzzled me somewhat, as the iden-
tity of one of the I am not quite sure.
I have numbered them #1 & 2.

#1 I am sure is *Camblesus rhizophyllus*,
but I am not certain of, I think it
is *Aphrosoma pinnatifidum* from the
form of the ear, but the wing
is the part which puzzles me, as far
as I can make out they both have
reticulated veins, while the *Aphrosoma*
I believe are free-veined, then again
they both have the little dots on the

specimens of the fungus, which I only have
over on the working form.

I have a plant of 41 & have obtained
a plantlet from pinning down the
end of one of the fungus, and I
did not think the *A. pinus* *sp.*
rooted so readily as the working form.
If it is not too much trouble I'd
be glad to have your opinion.

Having some time at my disposal
on the celebrated 22nd of Feb. I expect
several hours in the week, and for
the pleasure of locating one or two
more colonies of *B. bitumatum* &
I think it will be able to secure
all the specimens it wants.

I found them this time entirely in
the open, in old abandoned fields
without the protection of trees, bush
or brush-heap as is customary with

the oblique ones, as the sides were white-
tered & when they were they were pale,
brassy, of a lighter green, showing
more of the bronze, than the which
green in unprotected situations.

There is also a qualification I must
be made in regard to the larger
forms which I have spoken of as
B. terratorum towards major, I write
you that they did not show as much
of the rose & yellow as the oblique
did, but on my last trip, since
our last sweep I found several
which were lying flat on the ground
and looked a bluish-bronze, much
as the oblique do, but found none
with fruiting spikes & tho' I dug up
several of them for the special pur-
pose of looking for a fertile spike
but found two specimens with the

sterile frond, yellow & decidedly on the same, but with to small new sterile fronds just above the ground in the same vicinity, below the old frond. There certainly must be a strong affinity between them and *A. holosericeum*.

I also located some 25 or 30 plants of *O. bulbosum* (Nutt.), found them sometimes in the open & some under shelter, they were just above ground (5-6 in) with the fertile spike encircled by the spathe of the sterile frond, just waiting for the Soft South wind to woo them & make them raise their heads & greet their neighbors for the season of 1905.

I think if no more cold comes to us, that in about two or three weeks I may gather some good

specimens.

I am studying the difference bet
them in a O position. But am afraid
I will not be able to locate the
later, unless by sheer accident. Still
I mean to keep my "eye skin" for
we are told that it is the un-
expected which always happens.
Hoping you will pardon my
troubling you so often & that
you will not deem my sending
the photos "too many."

I remain

Yours very truly,

W. C. Coker

Niobate Ala

March 15th 1905

Mr Geo. E. Dancy, Jr.

Dear Sir:

I am sending you today by mail a few more specimens.

The *Balanidia heliostomat?* are just coming into fruit since 12th m and as you see they are of an entirely different line of fruiting and as far as I can judge are a different plant from the *B. oblongum* and also from specimens I have labeled in ped cit. *B. br. oblongum* until I can get its true pedigree.

I also send a few *Ophioglossi*, for all the you do not mention them I suppose "as they are of the "same breed of pups" you might like to take a look at them. I think that they are rather undersized, which may be occasioned

by the cold weather, it having been quite severe weather for us during Jan & Feb.

I shall be in the markets, and if I find any unusually good specimens of either *Batrachium* or *Phlegmaria* will send you a few more.

I think I have sent all varieties which are found with us, with the exception of *C. pusillum* and I am afraid I am destined to be disappointed in finding that one, but will try every chance I get to discover it, but as the season for them with us is considerably short, I am afraid my chances are small.

If I had been able to have assisted you in any way I am glad, as it will make me feel that perhaps I have been able to

thank you for your generosity in
sending me a specimen.

As I am thinking of trying some
hybridizing, I would like to worry
you with a few questions.

Miss Allen in her account of cross-
ing *A. polymerum* on *P. rhizophyllum*
mentions one portion of the *metathallus*
as containing the archegonia + another
the androecium - How can I tell "tissues
from which"? Was it pollen and set
blow or is it only revealed by the
microscope?

Among the spec' you sent to
me was a crested *Heckonia*, from
Bear Hill, Ore., if I remember correctly,
Can you give me the address of
any party thereabouts from whom I
could procure roots? I think it is
a particularly handsome form.

Finally I will say that if I can be
 of any use to you in getting any
 about or in any other way serve
 you I shall be glad to have
 your command me.

Thanking you for all your kind-
 ness and hoping I may not
 get "out of touch" of your per-
 sonal good graces. I remain

Very truly yours

W. E. Tucker

11
Mobile Ala Dec 15
Mr. Geo. E. Lavenport
Dear Sir:

Your favor of recent date, containing the blue prints of *P. serrulata* & *P. cretica* is hand.

Please accept my thanks for same.

The reason why I wanted a specimen of the latter was because I had a specimen from Mr. H. A. Green of Trent N. C., labelled *P. cretica* which was identical with the *Pteris* which is plentiful on the brick walls of our cotton warehouses, and I was anxious to get a genuine spec^{imen} to see if I had been correct in labelling my specimens.

The prints will answer my purpose as they give the difference very clearly, and one would have no excuse for misnaming after seeing them.

2

I send as many spores of the B. you want as I could get, when I went out to get them I found that nearly all of the plants had shed their spores and the stalk of the fertile frond had turned a whitish-yellow and were all laying down, and the sterile blade had also taken on a yellowish look showing that they were about through with business for season of 1904-5.

That is those plants which had sported a seed stalk were as above described, but those I found in sheltered or semi-sheltered situations and a few in exposed positions were still fresh and green, but not a single of the fresh looking ones had thrown up a fertile frond

I had gathered some for my own use, and a few for exchange and have selected a few of them which are as fully developed as

any I have seen, but while they are a fairly good average, I must confess that I have saved the best looking specimen of the lot for my own collection, and I don't think you will blame me for that.

I also send a lot of spores gathered last fall from the typical *B. obliquum* which I thought you might want for comparison with those from other sections.

Had you intimated that you ^{would} want the spores, I would have secured you a lot from all the different forms, including my favored (?) "*B. humaroides major*", which I think the most graceful of the lot, and also from *C. protalaphoroides*, but I did the best for you I could and am sorry if I "left undone any thing I should have done" &c.

I am a little loathe to ask you if you ever rec'd two small photos come

time since, one a walking fern
 and the other one I think the
 pinnatifid spleenwort, but I expect
 that they were so small that you
 over looked them, so it don't matter,
 as the only reason I was anxious
 to settle the question was because
 I have some of the spores of the
 last mentioned one which I have
 sown with the cheim spleenwort ^{and}
 am anxiously awaiting results, for
 after a careful reading of the
 pamphlet by Miss Stosson, which
 you sent me, I am inclined to
 believe (from her description & the
 pictures of her hybrids) that the
 plant found at Havana Ala is
 a ^{both deeply fringed (stipe)} hybrid of *A. cheim* & a
pinnatifidum, & not of a *cheim*
 & *Comptosius rhizophyllus* as all
 the specimens from that station I
 have are much more deeply pinnat-
 ifid than were those she raised.

I will be pleased to have any root which you can send me which will not cause inconvenience to get, nor too much expense for sending.

I have a bed in which I have nearly, if not quite all of our local ferns, and am enabled by having it, to study the different varieties, when I have not the time or opportunity to go into the woods. Should you want any more of the *P. serrulata*, or the *Presii* or the roots I can easily send you some they are plentiful with us, and should there be any other plant you would like from our section, any of the allies, *Azalla* &c or *Sagittaria Mohrii* *Epidendrum crispum*, &c &c I will be glad to do what I can to supply them.

Hoping that this will not close our correspondence which

6
I assure ^{you} has been both instructive
and interesting to me, and as-
suring you of my willing-ness
to serve you in any way within
my power I remain
Yours very truly
W. C. Lutes

P.S.

The plants selected for you I failed to
bring down to you with me this morning, but
they will follow in a day or so

Yrs. truly

W. C. Lutes

Mobile Ala

April 20th '85

Mr Geo E. Davenport.

Dear Sir:

I made a tour yesterday afternoon to see if a good season more sports of either the Andros tongue or trooper fern. but, found that the last week or ten days had been so dry, and the sun beginning to shine quite warm that both plants have shed their spores, and for this season there will be no more to be had for this season; if what I have sent you should prove too few for what you want I can, another season, should nothing unforeseen occur, gather for you as you want, and then sorry I did not know in time to secure a goodly quantity for you at this time.

I have taken the liberty of send-

you by making a few roots of
the three forms which I have
been successful in finding in
one section, and as you men-
tioned wanting to receive some
from the spores I thought per-
haps this might save you the
trouble or worry be careful in
comparing them with those raised
with you, which might differ
having raised under different
climatic conditions, but should
you not care to grow them or
it should prove inconvenient
to do so, why just send them
ready.

Should you conclude to place the
herbarium, I would suggest that you
give them as seed, potting them &
giving just enough water from
time to time to keep them alive
and bringing them out later, in
a similar manner to that which

is employed by plants with
plants requiring a period of
rest.

They spring up again next ear
the latter part of Aug or in Sept
owing to the fact of our having
little summer rains or rest -
that is the two oblique ones have
the summer rest not shown
until in Oct or Nov under some
conditions.

Have the plants about a cat
or so age of feeding *Gastrophilus*
phagophorus, that are not not be
ing mentioned in Dr. Meek's?
I s'p. and I expect that this
is about its Southern limit
Dactynotus pet has been also fed
by a friend of mine, that also
not being mentioned by Dr. Meek -
Hoping that these plants may

be of use to you, and holding
myself in readiness to attend
you in any way I can -
I remain

Very truly Yrs
H. C. Barker

Mobile Ala.

Apr 21/05

Mr Geo. E. Sawyers

Dear Sir:

In looking
over my letter recently I came across
this one from a gentleman living near
Phila. and as it contains a reference
to the prothalia of Patrioticism I thought
perhaps it might be an item you
could use, if so I there should be
any doubt, it is so written that
it could verify the statement.
Please return as I like to keep for
reference.

Should the specimen of Patriotic
sent you some time ago by Miss
Laura C. Simball of National City Cal.
prove to be anything new, let
me know as I want to keep for

and the way her letter reads it
leads me to think that perhaps
it may be a new spⁿ

With kind regards

I remain

Yours very truly

M. S. P. 1891

Malibu Cal.

April 26th 1911

Wm. B. Sargent

Dear Sir,

I have a specimen of a plant which I have been unable to locate, and if you can much trouble, I would be glad to name you but not what it is, I rather a garden plant and it is about the size of your size.

The plant is about 2 or 3 ins. high, of a fascicular growth, and the young fronds have a reddish or brownish cast when first unrolling, similar to the young fronds of *Urtica dioica* and the fully developed fronds have a stiff, brittle feeling.

I have been ^{now} able to find what it is and would be obliged to you if you

will kindly send me its name.

But if you are busy, and have not
the time to spare, may you please
to write with it.

With kind regards I remain
Yours and truly,

J. C. Gates

Mobile Ala

May 25/05

Mr. Geo. E. Pausenpark

Dear Sir:

I hope that
this may find you feeling
yourself again.

Will you kindly send me
the address of Asst Curtis,
if you know it?

He delivered the Florida
Lectures in T.B. for April 1904

Also do you know address
of C. J. Baker he is now
in connection with Cal terms
in T.B.

I am still trying to make my
collection more complete & I
am after some of the So. States
lectures

Yours truly,

W. L. Gentry

17
Philadelphia, Aug-25
Mr. H. C. Manly,
Dear Sir:

I hope ere this
reaches you that you will have ex-
tended elsewhere from your "Influence"
and will be enjoying your accustomed
health.

I am still hammering away at
my hobby as I have opportunity to
do so, and have had the pleasure
of one or two letters from Prof Eaton
of Keats' mass.

I had the temerity to write to him
"off hand", much the same as I
did to you, in hopes I would re-
ceive as kind treatment from him
as I did from you, and in that I
was not disappointed, for he like
all true men of science, are char-

able and considerate of those who
are trying in their humble way to
gain an insight into some of
Nature's secrets.

I also find that he is not entirely
in accord with Prof. Huxley, especially
on the "Bot ichius" question, and says
that in the Bot ichius, as in other
birds we are "over-spread".

I was prompted writing him by find-
ing out inadvertently that he "had
spent some time in Sothra in re-
cent years, and I was anxious to
add some of the Alpidium forms
to my collection of ferns.

He has promised to send me some
spec's and no doubt in due time
they will be received.

Being out on a tramp the other
day I was reminded of you by

going to have a look at some plants of B. which I saw found early last Spring at the time I was collecting "hite alms".

I found one or two plants of what I have called in writing your B. "binarunda" just I am mostly using this term till I find its correct spelling, which the sterile & fertile heads of both fallers had withered and fallen to the ground, but which had a reddish line found, as much the size and cutting of the "hite alms" springing up right where the old, withered stems had entered the ground, but if it sprang from the root or from the old stem I did not examine, because I wanted to watch it and see if it carried through the Summer.

now, and if a fertile spike would
create its upper and below, or
at the same time the chlorophyll
or similar form would spring
into life.

It interested me, for in all of
the books I have read on the sub-
ject said that the plants entirely
"disappeared" by the beginning of
the "winter" season, "reappearing"
again the following July or Aug.

There are but two plants and
they are a few yds apart
and on the edge of the Swamp
under the shade & protected by
Yucca and other shrubs.

I am on the "look out" to see if
I find any other similar plants,
to find out if this is merely an
accident or a design where the

Insects and diseases are present.
 I will write you as soon as I find
 anything I think worth recording.
 I have taken care to take plants
 of *Platanus* and *Passiflora* etc., the
 most common and from I have
 found more have started them in
 my greenhouse to see if they are
 not really a form induced by
 their environment. I am giving
 them plenty of moisture and ap-
 plications of bone meal & lime and
 I think from the new form be-
 coming to show that they will
 prove to be the regular normal type.
 Will write you as soon as I find
 anything more to write you what I find.
 I have also a Warden case in
 which I am trying to raise some
 "specimens," I have the same case.

to

with a soft soil, in the bottom
I have a galvanization of copper
water, in which I have two tubes
which are made from lime and
sand, known here as "lime stone"
tubes, these I have hammered out &
filled with finely sifted wood saw
dust. Each tube divided into two compart-
ments by a small wire strip, in
the first compartment I have species of
A. chomaria, var. *serotina*, *A. pin. stipitata*,
A. angustifolia, *A. byron. filic. form.*,
& *Cantharus subopacithus*, and my
plan is to use all the later will
not "mix" with others as well as
with the *A. chomaria*, but so far I have
got no prothallium to develop, there
are plenty of little round green globes
but that is all, the spores were
planted the first part of April

and I thought that by this
time I would have plenty
of material to write on, but
none so far.

What do you suppose is
the trouble?

Well I expect you will
think I have stopped long
before this, so will bring
this rather effusive to
a close.

Hoping I have not wear-
ied or bored you.

I remain,

Very truly,

P. H. G. Lusk

Mobile, Ala.

March 31st, '06

Mr. Geo. E. Davenport,

Dear Sir:

It has
been many months since
I have heard anything from ^{you}
and I have often thought
of how you are getting along
and if you were able to
take up systematic work
again

I have been unable to
do much myself, owing
to sickness in my fam-
ily, all last Fall & this
Winter, but have suc=

ceeded in adding quite a number of new species of ferns to my collection.

I am inclosing in this a pamphlet written by Mr Maxon, and published this Spring from Washington.

I know that you are not in accord with this line of procedure, but thought if you did not have it, you might like to keep up with what was "going on".

You once spoke of having growing in your yard a Crested Dicksonia, procured

some where in Mass, "Blue Hill" I think it was.

Should you be able to locate it at this time of the year I would be very glad to have you send me a root or so of it, but if it is not convenient to do so, do not let it worry you for I should not like to give you any trouble in that way.

I thought I'd like to try it as a specimen plant, because it would be out of the ordinary, everything

1
+

here is either the common
Boston fern, or Pierson's
fern.

Now my dear Sir!
don't let this bother you
and if not convenient don't
bother to answer this, for
I shall know if I don't
get any answer that
you are not able to
respond to my request.
Hoping that your health
has improved since I
last heard from you
and assuring you of my
sincere wishes for the
entire recovery of your

5

Sight, and holding my-
self ready to serve you
in any way I can
I remain —

Yours sincerely
Wm C. Dukes

X
Mobile Ala
May 19th 06

Mr Geo E. Danenport,
Medford Mass.

Dear Sir:

Package crested *Dennstaedtia*
recd in good condition, and I am very
much obliged for same.

I am afraid you think I was rather
persistent in the matter, but I thought
the specimen was a pretty one and
I was sure the plant would also
prove attractive in the growing state.
I packed it promptly, and hope to
secure an attractive plant.

I hope you have fully recovered
your health, and also that your
eyesight has improved for I should
hate to think of your being denied
the pleasure of botanical research,
as well as the public losing the
benefit of your work.
I have been of necessity obliged

to do less collecting, and am so placed now that I do not get into the woods as often as I need, or as frequently as I should like.

I was in hopes of meeting Mr Clute last winter when he was South attending the meeting at New Orleans, but the trains were so far off schedule time that he passed Mobile in the night time and consequently I missed him. Since writing you last I have made some very pleasant correspondents among the number Mrs Taylor of Thomaston Ga, and Dr R. J. Smith of Milpitas Cal, both of whom you doubtless know.

I find those who are fond of Nature-study, are always of a pleasant disposition and ready at all times to extend the

helping hand to struggling amateurs like myself.

During last winter I received from a correspondent specimens from France, England &c, and I have taken spores from many of the species and sown them in suitable places in the neighborhood of the City in hopes that some of them would become established and add to our flora.

I have also, lately set out several plants of both *Neph melle* and *Lyd japonicum* from a station near the City which is being opened up for settlement, and bids fair to destroy the station entirely.

This is the only place I know of either species being found about here, and is the one in which Mr McNeill is mentioned of having found them in a late pamphlet.

by Prof. Underwood on new ferns
in U.S., which publication you
have no doubt seen.

I am still "pegging" away on my
endeavor to raise a hybrid from
Aspl. parvulum + *A. pennatifidum* in
a similar manner in which Miss
J. raised hers from *A. cheucum* +
C. rhizophyllum, don't know if I ever
will succeed, as I find most dif-
ficulty in dividing the prothallium.
 Hoping you will let me know
at any time should I be able
to serve you and wishing for
you a pleasant, profitable and
healthy Summer
I remain

Yours very truly
W. C. Duker

Copy of Letter from Chas. T. Drury F. L. S. to
Waxen, Pres. S. F. Chaplin

"I have read with much interest Mr George E. Davenport's article on "Abnormal Forms and Hybridity in Ferns" and would ask to be permitted to point out that with reference to Mr E. F. Lowe's cross between Aspidium (Lastrea) filix-mas ~~var.~~ palea-ceum, known to fernists here as Lastrea pseudo-mas, and Aspidium abbreviatum known here as Lastrea propinqua, there is absolutely no question of distinct genera, nor any connection between the latter and Cytosium, or Polystichum except in a wide sense. The species Lastrea filix-mas has been subdivided into three — L. filix-mas, L. pseudo-mas and L. propinqua by the late Mr G. B. Wollaston, who pointed out sundry differences as regards deciduousness and other minor characters which certainly justify their classification as subspecies but no more. A cross consequently between them is less, not more, striking than one between Polystichum aculeatum and P. angulare, between which the subspecific difference is more marked. As for Cytosium, or Polystichum, they are both absolutely outside the question, both forms of Lastrea and Nephrodium pure and simple, if we prefer to adopt the synonyms.

To my mind, however, there is very little evidence of a cross having taken place at all. The result of the sowing appears to have been a crop of both kinds; and as both, moreover, are given to vary, and their characters are closely akin, even a plant intermediate between the two might well be a sport per se.

With the Polydictum cross or hybrid no such doubt exists, as two distinct varieties were taken and the peculiar cruciate characters of one species appeared in resulting plants of the other species, accompanied by a considerable loss of fertility, few spores germinating.

With regard to Polydictum Schneiderii, considered by Prof. Bower as a good hybrid between P. aureum and P. vulgare var. elegantissimum, there is absolutely no room for doubt as to the alliance. P. aureum is a large growing species with broad pinnate glaucous fronds. P. v. elegantissimum is tripinnately cut into slender segments, but not constantly so, partially reverting here and there to the normal, sometimes entire fronds or only pinnae or parts of pinnae doing so, so that one and the same frond may display the fine cutting, intermediate coarser cutting and quite normal segments.

P. Schneideria is leathery, gigantic, slightly glaucous P. v. elegantissimum, as large as P. aureum, with smaller but woolly rhizomes and partial reversions of precisely the same kind; large sori are produced freely, but the spores are all ~~aborted~~ aborted and the fertility fallacious.

Scolopendrium vulgare x Asplenium beterach is also a true hybrid beyond doubt. The fronds in my possession are scaleless beterach fronds, somewhat confluent at ~~the~~ tips; the frutification of the upper half is purely asplenoid, in single lines; in the lower half these lines are in faced pairs, i.e. Scolopendrium beyond any doubt at all.

The nomenclature of ferns is such a plough of despair that I hardly dare refer to Mr D. B. Gilchrist's article in "On the Genera of Ferns"; A Study of the tribe Aspidaceae" for fear of getting embogged.

I cannot, however, help expressing my agreement with him as regards Polytaenium. To see these lumped together with such wholly different plants as Nephrodium and Cystopteris is vile to every actual grower of ferns, and in this country no one, except the terribly conservative systematic

Botanists, will call them anything else but
Polygachnum

11 Shaa Road, Acton, London, W.
February 11-1900

~~11~~